

National Climatic Data Center

DATA DOCUMENTATION

FOR

DATA SET 9956 (DSI-9956)

DATSAV3 GLOBAL SURFACE HOURLY DATA

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1. **Abstract:** The DATSAV3 database is built from the DATSAV2 database. The DATSAV2 Surface Database is composed of worldwide surface weather observations from about 10,000 currently active stations, collected and stored from sources such as the Automated Weather Network (AWN) and the [Global Telecommunications System](#) (GTS). Most collected observations are decoded at the Air Force Weather Agency (AFWA) at Offutt AFB, Nebraska, and then sent electronically to the [USAF Combat Climatology Center](#) (AFCCC), collocated with NCDC in the Federal Climate Complex in Asheville, NC. AFCCC builds the final database through decode, validation, and quality control software. All data are stored in a single ASCII format. The database is used in climatological applications by numerous DoD and civilian customers.

DATSAV2 refers to the digital tape format in which decoded weather observations are stored. The DATSAV2 format conforms to Federal Information Processing Standards (FIPS). The DATSAV2 database includes data originating from various codes such as synoptic, airways, METAR (Meteorological Routine Weather Report), and SMARS (Supplementary Marine Reporting Station), as well as observations from automatic weather stations. The users handbook provides complete documentation for the database and its format.

AFCCC sorts the observations into station-date-time order, validates each station number against the Air Weather Service Master Station Catalog (AWSMSC), runs several quality control programs, and then merges and sorts the data further into monthly and yearly station-ordered files. AFCCC then provides the data to the collocated National Climatic Data Center (NCDC).

2. **Element Names and Definitions:** Surface Observation files consist of observational datasets. Observational databases will be stored in ASCII files. Data item definitions for items transmitted are provided at the end of this preface, providing definition of data items, position number for mandatory data items, field lengths for variable data items, minimum/maximum values of transmitted data, and values for missing data items.

Data Sequence - Data will be sequenced using the following data item order:

1. FIXED-WEATHER-STATION identifier
2. GEOPHYSICAL-POINT-OBSERVATION date
3. GEOPHYSICAL-POINT-OBSERVATION time
4. GEOPHYSICAL-POINT-OBSERVATION latitude coordinate
5. GEOPHYSICAL-POINT-OBSERVATION longitude coordinate
6. GEOPHYSICAL-POINT-OBSERVATION type surface report code
7. GEOPHYSICAL-REPORT-TYPE code

Record Structure - Each record is of variable length and is comprised of a control and mandatory data section and may also contain additional, remarks and reject data sections.

Maximum record size: 2,838 characters

Maximum block length: 8,192 characters

Control Data Section - The beginning of each record provides information about the report including date, time, and station location information. Data items will use positions identified in the applicable data item definition. The control data section is fixed length and is 54 characters long.

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Mandatory Data Section - The mandatory data section contains meteorological information on the basic elements such as winds, visibility, and temperature. These are the most commonly reported parameters and are available most of the time. The mandatory data section is fixed length and is 45 characters long.

Additional Data Section - Variable data is provided after the mandatory data. This additional data contains information of significance and/or which are received with a high degree of frequency. Identifiers are used to note when data is present in the record. If all data items in a group are missing, the entire group is not reported. If no groups are reported the section will be omitted. The additional data section is variable in length with a minimum of 0 characters and a maximum of 637 (634 characters plus a 3 character section identifier) characters.

Note: Specific information (where applicable) pertaining to each variable group of data elements is provided in the data item definition

Remarks Data Items - The non-decodable (remarks) data items are provided if they exist. Data items will vary in length and are identified in the applicable data item definition. The remarks section has a maximum length of 515 (512 characters plus a 3 character section identifier) characters.

Element Quality Data Section - The element quality data section contains information on data that has been determined bad or suspect during quality control procedures. This section is variable in length and contains 16 characters for each erroneous or suspect parameter. The section has a minimum length of 0 characters and a maximum length of 1587 (1584 plus a 3 character section identifier) characters.

Missing Values - Missing values for any non-signed item is filled (i.e., 999). Missing values for any signed item is positive filled (i.e., +99999).

Longitude and Latitude Coordinates - Longitudes will be reported with negative values representing longitudes west of 0 degrees, and latitudes will be negative south of the equator.

Control Data Section

POS: 1-4 TOTAL-VARIABLE-CHARACTERS - The number of characters in the variable data section.

DOM: A general domain comprised of the characters in the ASCII character set.

MIN: 0000
MAX: 9999

NOTE: (assume this includes remarks add data, remarks etc)

POS: 5-10 FIXED-WEATHER-STATION identifier - The identifier that represents a FIXED-WEATHER-STATION.

MIN: 000000
MAX: 999999

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:
:

DOM: A general domain comprised of the numeric characters (0-9).

COMMENT: This field includes all surface reporting stations, including ships, buoys, etc.

POS: 11-18 GEOPHYSICAL-POINT-OBSERVATION date - The date of a GEOPHYSICAL-POINT-OBSERVATION.

MIN: 00000101
MAX: 99991231

DOM: A general domain comprised of integer values 0-9 in the format YYYYMMDD. YYYY can be any positive integer value; MM is restricted to values 01-12; and DD is restricted to values 01-31.

POS: 19-22 GEOPHYSICAL-POINT-OBSERVATION time - The time of a GEOPHYSICAL-POINT-OBSERVATION based on Coordinated Universal Time Code (UTC).

MIN: 0000
MAX: 2359

DOM: A general domain comprised of integer values 0-9 in the format HHMM. HH is restricted to values 00-23; MM is restricted to values 00-59.

POS: 23-28 GEOPHYSICAL-POINT-OBSERVATION latitude coordinate - The latitude coordinate of a GEOPHYSICAL-POINT-OBSERVATION where southern hemisphere is negative.

MIN: -90000
MAX: +90000
UNITS: Degrees
SCALING FACTOR: 1000

DOM: A general domain comprised of the numeric characters (0-9), a plus sign(+), and a minus sign(-). Missing = +99999

POS: 29-35 GEOPHYSICAL-POINT-OBSERVATION longitude coordinate - The longitude coordinate of a GEOPHYSICAL-POINT-OBSERVATION where values west from 000000 to 179999 are signed negative.

MIN: -179999
MAX: +180000
UNITS: Degrees
SCALING FACTOR: 1000

DOM: A general domain comprised of the numeric characters (0-9), a plus sign(+), and a minus sign(-). Missing = +999999

POS: 36-40 GEOPHYSICAL-REPORT-TYPE code - The code that denotes the type of geophysical surface observation.

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DOM: A specific domain comprised of the characters in the ASCII character set.

FM-12 = SYNOP Report of surface observation from a fixed land station

FM-13 = SHIP Report of surface observation from a sea station

FM-14 = SYNOP MOBIL Report of surface observation from a mobile land station

FM-15 = METAR Aviation routine weather report

FM-16 = SPECI Aviation selected special weather report

FM-18 = BUOY Report of a buoy observation

SAO = Airways report (includes record specials)

SAOSP = Airways special report (excluding record specials)

AERO = Aerological report

AUTO = Report from an automatic station

SY-AE = Synoptic and aero merged report

SY-SA = Synoptic and airways merged report

SY-MT = Synoptic and metar merged report

SY-AU = Synoptic and auto merged report

SA-AU = Airways and auto merged report

S-S-A = Synoptic, airways and auto merged report

BOGUS = Bogus report

SMARS = Supplementary airways station report

POS: 41-45 GEOPHYSICAL-POINT-OBSERVATION elevation dimension - The elevation of a GEOPHYSICAL-POINT-OBSERVATION relative to Mean Sea Level (MSL).

MIN: -0400

MAX: +8850

UNITS: Meters

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9), a minus sign(-), and a plus sign(+). Missing = +9999

POS: 46-50 FIXED-WEATHER-STATION call letter identifier - The identifier that represents the call letters assigned to a FIXED-WEATHER-STATION.

DOM: A general domain comprised of the characters in the ASCII character set. Missing = 99999.

POS: 51-54 METEOROLOGICAL-POINT-OBSERVATION quality control process name - The name of the quality control process applied to a weather observation.

DOM: A general domain comprised of the ASCII character set.

Mandatory Data Section

POS: 55-57 WIND-OBSERVATION direction angle - The angle, measured in a clockwise direction, between true north and the direction from which the wind is blowing.

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:
:

MIN: 001
MAX: 360
UNITS: Angular Degrees
SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters
(0-9). Missing = 999.

POS: 58-58

WIND-OBSERVATION direction quality code - The code that
denotes a quality status of a reported WIND-OBSERVATION
direction angle.

DOM: A specific domain comprised of the characters in the
ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 59-59

WIND-OBSERVATION type code - The code that denotes the
character of the WIND-OBSERVATION.

DOM: A specific domain comprised of the characters in the
ASCII character set.

C: Calm
N: Normal
Q: Squall
V: Variable
9: Missing

POS: 60-63

WIND-OBSERVATION speed rate - The rate of horizontal travel
of air past a fixed point.

MIN: 0000
MAX: 0900
UNITS: meters per second
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters
(0-9). Missing = 9999.

POS: 64-64

WIND-OBSERVATION speed quality code - The code that denotes
a quality status of a reported WIND-OBSERVATION speed rate.

DOM: A specific domain comprised of the characters in the
ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

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POS: 65-69 SKY-CONDITION-OBSERVATION ceiling height dimension - The height Above Ground Level (AGL) of the lowest cloud or obscuring phenomena layer aloft with 5/8 or more summation total sky cover, which may be predominantly opaque, or the vertical visibility into a surface-based obstruction.

MIN: 00000
MAX: 21000
UNITS: Meters
SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). 99999 = missing.

POS: 70-70 SKY-CONDTION-OBSERVATION ceiling quality code - The code that denotes a quality status of a reported ceiling height dimension.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No Check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 71-71 SKY-CONDITION-OBSERVATION ceiling determination code - The code that denotes the method used to determine the ceiling.

DOM: A specific domain comprised of the characters in the ASCII character set.

A: Aircraft
B: Balloon
C: Statistically derived
E: Estimated
M: Measured
R: Radar
W: Obscured
9: Missing

POS: 72-72 SKY-CONDITION-OBSERVATION CAVOK code - The code that represents whether the 'Ceiling And Visibility Okay' (CAVOK) condition has been reported.

DOM: A specific domain comprised of the characters in the ASCII character set.

N: No
Y: Yes

POS: 73-78 VISIBILITY-OBSERVATION distance dimension - The horizontal distance at which an object can be seen and identified.

MIN: 000000

:
:
:

MAX: 160000
UNITS: Meters

DOM: A general domain comprised of the numeric characters
(0-9). Missing = 999999

NOTE: Values greater than 1600 are entered as 1600

POS: 79-79 VISIBILITY-OBSERVATION distance quality code - The code that
denotes a quality status of a reported distance of a
visibility observation.

DOM: A specific domain comprised of the characters in the
ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 80-80 VISIBILITY-OBSERVATION variability code - The code that
denotes whether or not the reported visibility is variable.

DOM: A specific domain comprised of the characters in the
ASCII character set.

N: Not variable
V: Variable

POS: 81-81 VISIBILITY-OBSERVATION quality variability code - The code
that denotes a quality status of a reported VISIBILITY-
OBSERVATION variability code.

DOM: A specific domain comprised of the characters in the
ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 82-86 AIR-TEMPERATURE-OBSERVATION air temperature - The
temperature of the air.

MIN: -0932
MAX: +0618
UNITS: Degrees Celsius
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters
(0-9), a plus sign (+), and a minus sign (-).
+9999 = missing.

POS: 87-87 AIR-TEMPERATURE-OBSERVATION air-temperature quality code-
The code that denotes a quality status of an AIR-

:
:

TEMPERATURE-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 88-92 AIR-TEMPERATURE-OBSERVATION dew point temperature - The temperature to which a given parcel of air must be cooled at constant pressure and water vapor content in order for saturation to occur.

MIN: -0982
MAX: +0368
UNITS: Degrees Celsius
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9), a plus sign(+), and a minus sign(-). +9999 = missing.

POS: 93-93 AIR-TEMPERATURE-OBSERVATION dew point quality code - The code that denotes a quality status of the reported dew point temperature.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

POS: 94-98 ATMOSPHERIC-PRESSURE-OBSERVATION sea level pressure rate - The air pressure relative to Mean Sea Level (MSL).

MIN: 08600
MAX: 10900
UNITS: Hectopascals
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9). 99999 = missing.

POS: 99-99 ATMOSPHERIC-PRESSURE-OBSERVATION sea level pressure quality code - The code that denotes a quality status of the sea level pressure of an ATMOSPHERIC-PRESSURE-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good

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:
:

2 = Suspect
3 = Erroneous
9 = Missing

Additional Data Section

FLD LEN: 3 GEOPHYSICAL-POINT-OBSERVATION additional data identifier -
The identifier that denotes the beginning of the additional
data section.

DOM: A specific domain comprised of the ASCII character set.
ADD =Additional Data Section

FLD LEN: 3 LIQUID-PRECIPITATION occurrence identifier - The identifier
that represents an episode of LIQUID-PRECIPITATION.

DOM: A specific domain comprised of the characters in the
ASCII character set.

AA1 - AA4 An indicator of up to 4 repeating fields of
the following items:

LIQUID-PRECIPITATION period quantity
LIQUID-PRECIPITATION depth dimension
LIQUID-PRECIPITATION trace code

FLD LEN: 2 LIQUID-PRECIPITATION period quantity - The quantity of time
over which the LIQUID-PRECIPITATION was measured.

MIN: 00
MAX: 48
UNITS: Hours
SCALING FACTOR: 1

DOM: A specific domain comprised of the characters in the
ASCII character set. 99 = missing.

FLD LEN: 4 LIQUID-PRECIPITATION depth dimension - The depth of LIQUID-
PRECIPITATION that is measured at the time of an
observation.

MIN: 0000
MAX: 2000
UNITS: millimeters
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters
(0-9). 9999 = missing.

FLD LEN: 1 LIQUID-PRECIPITATION condition code - The code that denotes
whether a LIQUID-PRECIPITATION depth dimension was a trace
value.

DOM: A specific domain comprised of the characters in the
ASCII character set.

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:
:

1:measurement impossible or inaccurate
2:Trace
9:Missing

FLD LEN: 3 PRECIPITATION-OBSERVATION-HISTORY identifier - The identifier that indicates the occurrence of precipitation history information.

DOM: A specific domain comprised of the characters in the ASCII character set.

AC1 An indicator of the following items:
PRECIPITATION-OBSERVATION-HISTORY duration code
PRECIPITATION-OBSERVATION-HISTORY characteristic code

FLD LEN: 1 PRECIPITATION-OBSERVATION-HISTORY duration code - The code that denotes the duration of precipitation.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Lasted less than 1 hour
1 = Lasted 1 - 3 hours
2 = Lasted 3 - 6 hours
3 = Lasted more than 6 hours
9 = missing

FLD LEN: 1 PRECIPITATION-OBSERVATION-HISTORY characteristic code - The code that denotes whether precipitation is continuous or intermittent.

DOM: A specific domain comprised of the characters in the ASCII character set.

C = Continuous
I = Intermittent
9 = missing

FLD LEN: 3 PRECIPITATION-BOGUS-OBSERVATION identifier - The identifier that represents a PRECIPITATION-BOGUS-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

AG1 An indicator of the occurrence of the following items:
PRECIPITATION-OBSERVATION discrepancy code
PRECIPITATION-OBSERVATION estimated water equivalency dimension

FLD LEN: 1 PRECIPITATION-BOGUS-OBSERVATION discrepancy code - The code that denotes the type of discrepancy between a PRECIPITATION-OBSERVATION and other related observations at the same location.

DOM: A specific domain comprised of the characters in the ASCII character set.

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0: Reported amount of precipitation and reported weather agree
 1: Precipitation missing or not reported and none inferred by weather
 2: Precipitation missing, but precipitation inferred by weather
 3: Precipitation reported, but none inferred by weather
 4: Zero precipitation reported, but precipitation inferred by weather
 5: Zero precipitation reported, no precipitation inferred and precipitation not occurring at the reporting station
 9: Missing

FLD LEN: 3 PRECIPITATION-BOGUS-OBSERVATION estimated water equivalency dimension - The estimated depth of precipitation in water equivalency for a 3-hour synoptic period.

MIN: 000
 MAX: 998
 UNITS: millimeters
 SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). 999 = missing.

FLD LEN: 3 SNOW-DEPTH identifier - The identifier that denotes the start of a SNOW-DEPTH data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

AJ1
 SNOW-DEPTH dimension
 SNOW-DEPTH condition code
 SNOW-DEPTH equivalent water depth dimension
 SNOW-DEPTH equivalent water condition code

FLD LEN: 4 SNOW-DEPTH dimension - The depth of snow and ice on the ground.

MIN: 0000
 MAX: 1200
 UNITS: centimeters
 SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). 9999 = missing.

FLD LEN: 1 SNOW-DEPTH condition code - The code that denotes specific conditions associated with the measurement of snow in a PRECIPITATION-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

1: Measurement impossible or inaccurate

:
 :
 :

2: Snow cover not continuous
3: Trace
9: Missing

FLD LEN: 6 SNOW-DEPTH equivalent water depth dimension - The depth of the liquid content of solid precipitation that has accumulated on the ground.

MIN: 000000
MAX: 120000
UNITS: millimeters
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9). 999999 = missing.

FLD LEN 1 SNOW-DEPTH equivalent water condition code - The code that denotes specific conditions associated with the measurement of the SNOW-DEPTH.

DOM: A specific domain comprised of the characters in the ASCII character set.

1: Measurement impossible or inaccurate
2: Trace
9: Missing

FLD LEN: 3 HAIL identifier - The identifier that denotes the start of a HAIL data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

HL1 An indicator of the occurrence of the following item:
HAIL dimension

FLD LEN: 3 HAIL size - The diameter of the largest hailstone observed.

MIN: 000
MAX: 200
UNITS: Centimeters
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

FLD LEN: 3 SNOW-ACCUMULATION occurrence identifier - The identifier that represents an episode of SNOW-ACCUMULATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

AL1 - AL4 An indicator of up to 4 repeating fields of the following items:
SNOW-ACCUMULATION six hour depth dimension
SNOW-ACCUMULATION condition code

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:
:

SNOW-ACCUMULATION period quantity

FLD LEN: 2 SNOW-ACCUMULATION period quantity - The quantity of time over which the SNOW-ACCUMULATION occurred.

MIN: 00
MAX: 72
UNITS: Hours
SCALING FACTOR: 1

DOM: A general domain comprised of the characters in the ASCII character set. 99 = missing.

FLD LEN: 3 SNOW-ACCUMULATION depth dimension - The depth of a SNOW-ACCUMULATION.

MIN: 000
MAX: 500
UNITS: centimeters
SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). 999 = Missing.

FLD LEN: 1 SNOW-ACCUMULATION condition code - The code that denotes specific conditions associated with the measurement of the depth of a SNOW-ACCUMULATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

1: Measurement impossible or inaccurate
2: Snow cover not continuous
3: Trace
9: Missing

FLD LEN: 3 PRESENT-WEATHER-OBSERVATION manual occurrence identifier - The identifier that signifies the reporting of present weather.

DOM: A specific domain comprised of the ASCII characters.

MW1 = first weather reported
MW2 = second weather reported
MW3 = third weather reported
MW4 = fourth weather reported
MW5 = fifth weather reported
MW6 = sixth weather reported
MW7 = seventh weather reported

An indicator of up to 7 repeating fields of the following items:

PRESENT-WEATHER-OBSERVATION manual atmospheric condition code.
PRESENT-WEATHER-OBSERVATION quality manual atmospheric condition code

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:

FLD LEN: 2 PRESENT-WEATHER-OBSERVATION manual atmospheric condition
code - The code that denotes a specific type of weather
observed manually.

DOM: A specific domain comprised of the characters in the
ASCII character set.

00-49 No precipitation at the station at the time of observation

00-19 No precipitation, fog, ice fog (except for 11 and 12), duststorm,
sandstorm, drifting or blowing snow at the station at the time of
observation or, except for 09 and 17, during the preceding hour.

00: Cloud development not observed or not observable
01: Clouds generally dissolving or becoming less developed
02: State of sky on the whole unchanged
03: Clouds generally forming or developing
04: Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke
or volcanic ashes
05: Haze
06: Widespread dust in suspension in the air, not raised by wind at or near
the station at the time of observation
07: Dust or sand raised by wind at or near the station at the time of
observation, but no well-developed dust whirl(s) or sand whirl(s), and no
duststorm or sandstorm seen: or, in the case of ships, blowing spray at
the station
08: Well-developed dust whirl(s) or sand whirl(s) seen at or near the station
during the preceding hour or at the time of observation, but no duststorm
or sandstorm
09: Duststorm or sandstorm within sight at the time of observation, or at the
station during the preceding hour
10: Mist
11: Patches of shallow fog or ice fog at the station, whether on land or sea,
not deeper than about 2 meters on land or 10 meters at sea
12: More or less continuous shallow fog or ice fog at the station, whether on
land or sea, not deeper than about 2 meters on land or 10 meters at sea
13: Lightning visible, no thunder heard
14: Precipitation within sight, not reaching the ground or the surface of the
sea
15: Precipitation within sight, reaching the ground or the surface of the sea,
but distant, i.e. estimated to be more than 5 km from the station
16: Precipitation within sight, reaching the ground or the surface of the sea,
near to, but not at the station
17: Thunderstorm, but no precipitation at the time of observation
18: Squalls at or within sight of the station during the preceding hour or at
the time of observation
19: Funnel cloud(s) (Tornado cloud or waterspout) at or within sight of the
station during the preceding hour or at the time of observation

20-29 Precipitation, fog, ice fog or thunderstorm at the station during the
preceding hour, but not at the time of observation.

20: Drizzle (not freezing) or snow grains not falling as shower(s)
21: Rain (not freezing) not falling as shower(s)
22: Snow not falling as shower(s)

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:

23: Rain and snow or ice pellets not falling as shower(s)
 24: Freezing drizzle or freezing rain not falling as shower(s)
 25: Shower(s) of rain
 26: Shower(s) of snow, or of rain and snow
 27: Shower(s) of hail (Hail, small hail, snow pellets), or rain and hail
 28: Fog or ice fog
 29: Thunderstorm (with or without precipitation)
 30: Slight or moderate duststorm or sandstorm has decreased during the preceding hour
 31: Slight or moderate duststorm or sandstorm no appreciable change during the preceding hour
 32: Slight or moderate duststorm or sandstorm has begun or has increased during the preceding hour
 33: Severe duststorm or sandstorm has decreased during the preceding hour
 34: Severe duststorm or sandstorm no appreciable change during the preceding hour
 35: Severe duststorm or sandstorm has begun or has increased during the preceding hour
 36: Slight or moderate drifting snow generally low (below eye level)
 37: Heavy drifting snow generally low (below eye level)
 38: Slight or moderate blowing snow generally high (above eye level)
 39: Heavy blowing snow generally high (above eye level)

40-49 Fog or ice fog at the time of observation

40: Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer
 41: Fog or ice fog in patches
 42: Fog or ice fog, sky visible, has become thinner during the preceding hour
 43: Fog or ice fog, sky invisible, has become thinner during the preceding hour
 44: Fog or ice fog, sky visible, no appreciable change during the preceding hour
 45: Fog or ice fog, sky invisible, no appreciable change during the preceding hour
 46: Fog or ice fog, sky invisible, has begun or has become thicker during the preceding hour
 47: Fog or ice fog, sky invisible, has begun or has become thicker during the preceding hour
 48: Fog, depositing rime, sky visible
 49: Fog, depositing rime, sky invisible

50-99 Precipitation at the station at the time of observation

50-59 Drizzle

50: Drizzle, not freezing, intermittent, slight at time of observation
 51: Drizzle, not freezing, continuous, slight at time of observation
 52: Drizzle, not freezing, intermittent, moderate at time of observation
 53: Drizzle, not freezing, continuous, moderate at time of observation
 54: Drizzle, not freezing, intermittent, heavy (dense) at time of observation
 55: Drizzle, not freezing, continuous, heavy (dense) at time of observation
 56: Drizzle, freezing, slight
 57: Drizzle, freezing, moderate or heavy (dense)
 58: Drizzle and rain, slight
 59: Drizzle and rain, moderate or heavy

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60-69: Rain

60: Rain, not freezing, intermittent, slight at time of observation
61: Rain, not freezing, continuous, slight at time of observation
62: Rain, not freezing, intermittent, moderate at time of observation
63: Rain, not freezing, continuous, moderate at time of observation
64: Rain, not freezing, intermittent, heavy at time of observation
65: Rain, not freezing, continuous, heavy at time of observation
66: Rain, freezing, slight
67: Rain, freezing, moderate or heavy
68: Rain or drizzle and snow, slight
69: Rain or drizzle and snow, moderate or heavy

70-79 Solid precipitation not in showers

70: Intermittent fall of snowflakes, slight at time of observation
71: Continuous fall of snowflakes, slight at time of observation
72: Intermittent fall of snowflakes, moderate at time of observation
73: Continuous fall of snowflakes, moderate at time of observation
74: Intermittent fall of snowflakes, heavy at time of observation
75: Continuous fall of snowflakes, heavy at time of observation
76: Diamond dust (with or without fog)
77: Snow grains (with or without fog)
78: Isolated star-like snow crystals (with or without fog)
79: Ice pellets

80-99 Showery precipitation, or precipitation with current or recent
thunderstorm.

80: Rain shower(s), slight
81: Rain shower(s), moderate or heavy
82: Rain shower(s), violent
83: Shower(s) of rain and snow mixed, slight
84: Shower(s) of rain and snow mixed, moderate or heavy
85: Show shower(s), slight
86: Snow shower(s), moderate or heavy
87: Shower(s) of snow pellets or small hail, with or without rain or rain and
snow mixed, slight
88: Shower(s) of snow pellets or small hail, with or without rain or rain and
snow mixed, moderate or heavy
89: Shower(s) of hail (hail, small hail, snow pellets) , with or without rain
or rain and snow mixed, not associated with thunder, slight
90: Shower(s) of hail (hail, small hail, snow pellets), with or without rain
or rain and snow mixed, not associated with thunder, moderate or heavy
91: Slight rain at time of observation, thunderstorm during the preceding hour
but not at time of observation
92: Moderate or heavy rain at time of observation, thunderstorm during the
preceding hour but not at time of observation
93: Slight snow, or rain and snow mixed or hail (Hail, small hail, snow
pellets), at time of observation, thunderstorm during the preceding hour
but not at time of observation
94: Moderate or heavy snow, or rain and snow mixed or hail (Hail, small hail,
snow pellets) at time of observation, thunderstorm during the preceding
hour but not at time of observation
95: Thunderstorm, slight or moderate, without hail (Hail, small hail, snow
pellets), but with rain and/or snow at time of observation, thunderstorm
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at time of observation

96: Thunderstorm, slight or moderate, with hail (hail, small hail, snow pellets) at time of observation, thunderstorm at time of observation

97: Thunderstorm, heavy, without hail (Hail, small hail, snow pellets), but with rain and/or snow at time of observation, thunderstorm at time of observation

98: Thunderstorm combined with duststorm or sandstorm at time of observation, thunderstorm at time of observation

99: Thunderstorm, heavy, with hail (Hail, small hail, snow pellets) at time of observation, thunderstorm at time of observation

FLD LEN: 1 PRESENT-WEATHER-OBSERVATION quality manual atmospheric condition code - The code that denotes a quality status of a reported present weather observation from a manual station.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3 PRESENT-WEATHER-OBSERVATION automated occurrence identifier- The identifier that signifies the reporting of present weather.

DOM: A specific domain comprised of the ASCII characters.

AW1 = first automated weather report
PRESENT-WEATHER-OBSERVATION automated atmospheric condition code.
PRESENT-WEATHER-OBSERVATION quality automated atmospheric condition code

FLD LEN: 2 PRESENT-WEATHER-OBSERVATION automated atmospheric condition code - The code that denotes a specific type of weather reported by an automated device.

DOM: A specific domain comprised of the characters in the ASCII character set.

00: No significant weather observed
01: Clouds generally dissolving or becoming less developed
02: State of sky on the whole unchanged during the past hour
03: Clouds generally forming or developing during the past hour
04: Haze, smoke, or dust in suspension in the air, visibility equal to or greater than 1km
05: Smoke
10: Mist
11: Diamond dust
12: Distant lightning
18: Squalls

(Code figures 20-26 are used to report precipitation, fog, or thunderstorm at the station during the preceding hour, but not at the time of observation.)

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20: Fog
21: Precipitation
22: Drizzle (not freezing) or snow grains
23: Rain (not freezing)
24: Snow
25: Freezing drizzle or freezing rain
26: Thunderstorm (with or without precipitation)
27: Blowing or drifting snow or sand
28: Blowing or drifting snow or sand, visibility equal to or greater than 1 km
29: Blowing or drifting snow or sand, visibility less than 1 km
30: Fog
31: Fog or ice fog in patches
32: Fog or ice fog, has become thinner during the past hour
33: Fog or ice fog, no appreciable change during the past hour
34: Fog or ice fog, has begun or become thicker during the past hour
35: Fog, depositing rime
40: Precipitation
41: Precipitation, slight or moderate
42: Precipitation, heavy
43: Liquid precipitation, slight or moderate
44: Liquid precipitation, heavy
45: Solid precipitation, slight or moderate
46: Solid precipitation, heavy
47: Freezing precipitation, slight or moderate
48: Freezing precipitation, heavy
50: Drizzle
51: Drizzle, not freezing, slight
52: Drizzle, not freezing, moderate
53: Drizzle, not freezing, heavy
54: Drizzle, freezing, slight
55: Drizzle, freezing, moderate
56: Drizzle, freezing, heavy
57: Drizzle and rain, slight
58: Drizzle and rain, moderate or heavy
60: Rain
61: Rain, not freezing, slight
62: Rain, not freezing, moderate
63: Rain, not freezing, heavy
64: Rain, freezing, slight
65: Rain, freezing, moderate
66: Rain, freezing, heavy
67: Rain or drizzle and snow, slight
68: Rain or drizzle and snow, moderate or heavy
70: Snow
71: Snow, slight
72: Snow, moderate
73: Snow, heavy
74: Ice pellets, slight
75: Ice pellets, moderate
76: Ice pellets, heavy
80: Showers or intermittent precipitation
81: Rain showers or intermittent rain, slight
82: Rain showers or intermittent rain, moderate
83: Rain showers or intermittent rain, heavy
84: Rain showers or intermittent rain, violent
85: Snow showers or intermittent rain, slight

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20:

86: Snow showers or intermittent rain, moderate
 87: Snow showers or intermittent rain, heavy
 90: Thunderstorm
 91: Thunderstorm, slight or moderate, with no precipitation
 92: Thunderstorm, slight or moderate, with rain showers and/or snow showers
 93: Thunderstorm, slight or moderate, with hail
 94: Thunderstorm, heavy, with no precipitation
 95: Thunderstorm, heavy, with rain showers and/or snow
 96: Thunderstorm, heavy, with hail
 99: Tornado

FLD LEN: 1 PRESENT-WEATHER-OBSERVATION quality automated atmospheric condition code - The code that denotes a quality status of a reported present weather observation from an automated station.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
 1 = Good
 2 = Suspect
 3 = Erroneous
 9 = Missing

FLD LEN: 3 PAST-WEATHER-OBSERVATION manual occurrence identifier - The identifier that signifies the reporting of past weather.

DOM: A specific domain comprised of the characters in the ASCII character set.

AY1 - AY2 An indicator of up to 2 repeating fields of the following item:

PAST-WEATHER-OBSERVATION manual atmospheric condition code
 PAST-WEATHER-OBSERVATION quality manual atmospheric condition code
 PAST-WEATHER-OBSERVATION period quantity
 PAST-WEATHER-OBSERVATION period quality code

FLD LEN: 1 PAST-WEATHER-OBSERVATION manual atmospheric condition code- The code that denotes a specific type of past weather observed manually.

DOM: A specific domain comprised of the characters in the ASCII character set.

Domain Value ID: Domain Value Definition Text

0: Cloud covering 1/2 or less of the sky throughout the appropriate period
 1: Cloud covering more than 1/2 of the sky during part of the appropriate period and covering 1/2 or less during part of the period
 2: Cloud covering more than 1/2 of the sky throughout the appropriate period
 3: Sandstorm, duststorm or blowing snow
 4: Fog or ice fog or thick haze
 5: Drizzle
 6: Rain
 7: Snow, or rain and snow mixed
 8: Shower(s)

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9: Thunderstorm(s) with or without precipitation

FLD LEN: 1 PAST-WEATHER-OBSERVATION quality manual atmospheric condition code - The code that denotes a quality status of a reported past weather observation from a manual station.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2 PAST-WEATHER-OBSERVATION period quantity - The quantity of time over which a PAST-WEATHER-OBSERVATION occurred.

MIN: 01
MAX: 24
UNITS: hours

DOM: A general domain comprised of the ASCII characters (0-9). 99 = missing

FLD LEN: 1 PAST-WEATHER-OBSERVATION period quality code - The code that denotes a quality status of a reported past weather period.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3 PAST-WEATHER-OBSERVATION automated occurrence identifier - The identifier that signifies the reporting of present weather.

DOM: A specific domain comprised of the characters in the ASCII character set.

AZ1- AZ2 An indicator of the following item: (this may occur 0 - 2 times)

PAST-WEATHER-OBSERVATION automated atmospheric condition code

PAST-WEATHER-OBSERVATION quality automated atmospheric condition code

PAST-WEATHER-OBSERVATION period quantity

PAST-WEATHER-OBSERVATION period quality code

FLD LEN: 1 PAST-WEATHER-OBSERVATION automated atmospheric condition code - The code that denotes a specific type of past weather reported by an automated device.

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DOM: A specific domain comprised of the characters in the ASCII character set.

0: No significant weather observed
1: Visibility reduced
2: Blowing phenomena, visibility reduced
3: Fog
4: Precipitation
5: Drizzle
6: Rain
7: Snow or ice pellets
8: Showers or intermittent precipitation
9: Thunderstorm

FLD LEN: 1 PAST-WEATHER-OBSERVATION quality automated atmospheric condition code - The code that denotes a quality status of a reported past weather observation from an automated station.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2 PAST-WEATHER-OBSERVATION period quantity - The quantity of time over which a PAST-WEATHER-OBSERVATION occurred.

MIN: 01
MAX: 24
UNITS: hours

DOM: A general domain comprised of the ASCII characters (0-9). 99 = missing

FLD LEN: 1 PAST-WEATHER-OBSERVATION period quality code - The code that denotes a quality status of a reported past weather period.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3 RUNWAY-VISUAL-RANGE-OBSERVATION identifier - The identifier that indicates the occurrence of a runway visibility report.

DOM: A specific domain comprised of the ASCII characters.
ED1

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FLD LEN: 2 RUNWAY-VISUAL-RANGE-OBSERVATION direction angle - The angle as measured from magnetic north to the runway along which the visibility is observed.

MIN: 01
MAX: 36
UNITS: Tens of degrees
SCALING FACTOR: 1/10

DOM: A general domain comprised of the characters in the ASCII character set. 99 = missing

FLD LEN: 1 RUNWAY-VISUAL-RANGE-OBSERVATION runway designator code - The code that denotes the left, right or center runway as the one to which the visibility applies.

DOM: A specific domain comprised of the ASCII characters:

L = left
C = center
R = right
U = unknown

FLD LEN: 4 RUNWAY-VISUAL-RANGE-OBSERVATION visibility dimension - The dimension of the horizontal distance that can be seen along the runway.

MIN: 0000
MAX: 5000
UNITS: meters

DOM: A general domain comprised of the ASCII characters (0-9). 9999 = missing

FLD LEN: 3 SKY-COVER-LAYER identifier - The identifier that represents a SKY-COVER-LAYER.

DOM: A specific domain comprised of the characters in the ASCII character set.

GA1-GA6 An indicator of up to 6 repeating fields of the following items:
SKY-COVER-LAYER coverage code
SKY-COVER-LAYER base height dimension
SKY-COVER-LAYER cloud type code

FLD LEN: 2 SKY-COVER-LAYER coverage code - The code that denotes the fraction of the total celestial dome covered by a SKY-COVER-LAYER.

DOM: A specific domain comprised of the characters in the ASCII character set.

00: None, SKC or CLR
01: One okta - 1/10 or less but not zero
02: Two oktas - 2/10 - 3/10, or FEW
03: Three oktas - 4/10

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04: Four oktas - 5/10, or SCT
 05: Five oktas - 6/10
 06: Six oktas - 7/10 - 8/10
 07: Seven oktas - 9/10 or more but not 10/10, or BKN
 08: Eight oktas - 10/10, or OVC
 09: Sky obscured, or cloud amount cannot be estimated
 10: Partial obscuration
 99: Missing

FLD LEN: 6 SKY-COVER-LAYER base height dimension - The height relative to a VERTICAL-REFERENCE-DATUM of the lowest surface of a cloud.

MIN: -00400
 MAX: +35000
 UNITS: Meters
 SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). +99999 = missing

FLD LEN: 2 SKY-COVER-LAYER cloud type code - The code that denotes the classification of the clouds that comprise a SKY-COVER-LAYER.

DOM: A specific domain comprised of the characters in the ASCII character set.

00: Cirrus (Ci)
 01: Cirrocumulus (Cc)
 02: Cirrostratus (Cs)
 03: Altocumulus (Ac)
 04: Altostratus (As)
 05: Nimbostratus (Ns)
 06: Stratocumulus (Sc)
 07: Stratus (St)
 08: Cumulus (Cu)
 09: Cumulonimbus (Cb)
 10: Cloud not visible owing to darkness, fog, dust storm, sandstorm, or other analogous phenomena
 99: Missing

FLD LEN: 3 SKY-CONDITION-OBSERVATION identifier - An indicator that denotes the start of a SKY-CONDITION-OBSERVATION data group.

DOM: A specific domain comprised of the characters in the ASCII character set.

GF1 : An indicator of the occurrence of the following data items:

SKY-CONDITION-OBSERVATION total coverage code
 SKY-CONDITION-OBSERVATION quality total coverage code
 SKY-CONDITION-OBSERVATION total lowest cloud cover code
 SKY-CONDITION-OBSERVATION quality total lowest cloud cover code
 SKY-CONDITION-OBSERVATION low cloud genus code

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SKY-CONDITION-OBSERVATION quality low cloud genus code
SKY-CONDITION-OBSERVATION lowest cloud base height dimension
SKY-CONDITION-OBSERVATION lowest cloud base height quality
code
SKY-CONDITION-OBSERVATION mid cloud genus code
SKY-CONDITION-OBSERVATION quality mid cloud genus code
SKY-CONDITION-OBSERVATION high cloud genus code
SKY-CONDITION-OBSERVATION quality high cloud genus code

FLD LEN: 2

SKY-CONDITION-OBSERVATION total coverage code - The code
that denotes the fraction of the total celestial dome
covered by clouds or other obscuring phenomena.

DOM: A specific domain comprised of the characters in the
ASCII character set.

00: None, SKC or CLR
01: One okta - 1/10 or less but not zero
02: Two oktas - 2/10 - 3/10, or FEW
03: Three oktas - 4/10
04: Four oktas - 5/10, or SCT
05: Five oktas - 6/10
06: Six oktas - 7/10 - 8/10
07: Seven oktas - 9/10 or more but not 10/10, or BKN
08: Eight oktas - 10/10, or OVC
09: Sky obscured, or cloud amount cannot be estimated
10: Partial obscuration
99: Missing

FLD LEN: 1

SKY-CONDITION-OBSERVATION quality total coverage code- The
code that denotes a quality status of a reported total sky
coverage code.

DOM: A specific domain comprised of the characters in the
ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2

SKY-CONDITION-OBSERVATION total lowest cloud cover code -
The code that represents the fraction of the celestial dome
covered by all low clouds present; if no low clouds are
present, the code denotes the fraction covered by all middle
level clouds present.

DOM: A specific domain comprised of the characters in the
ASCII character set.

00: None
01: One okta or 1/10 or less but not zero
02: Two oktas or 2/10-3/10
03: Three oktas or 4/10
04: Four oktas or 5/10
05: Five oktas or 6/10

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06: Six oktas or 7/10 - 8/10
07: Seven oktas or 9/10 or more but not 10/10
08: Eight oktas or 10/10
09: Sky obscured, or cloud amount cannot be estimated
99: Missing

FLD LEN: 1 SKY-CONDITION-OBSERVATION quality total lowest cloud cover code - The code that denotes a quality status of a reported total lowest cloud cover code.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2 SKY-CONDITION-OBSERVATION low cloud genus code - The code that denotes a type of low cloud.

DOM: A specific domain comprised of the characters in the ASCII Character set.

00: No low clouds
01: Cumulus humulis or Cumulus fractus other than of bad weather or both
02: Cumulus mediocris or congestus, with or without Cumulus of species fractus or humulis or Stratocumulus all having bases at the same level
03: Cumulonimbus calvus, with or without Cumulus, Stratocumulus or Stratus
04: Stratocumulus cumulogenitus
05: Stratocumulus other than Stratocumulus cumulogenitus
06: Stratus nebulosus or Stratus fractus other than of bad weather, or both
07: Stratus fractus or Cumulus fractus of bad weather, or both (pannus) usually below Altostratus or Nimbostratus
08: Cumulus and Stratocumulus other than Stratocumulus cumulogenitus, with bases at different levels
09: Cumulonimbus capillatus (often with an anvil), with or without Cumulonimbus calvus, Cumulus, Stratocumulus, Stratus or pannus
99: Missing

FLD LEN: 1 SKY-CONDITION-OBSERVATION quality low cloud genus code - The code that denotes a quality status of a reported low cloud type.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous

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9 = Missing

FLD LEN: 5 SKY-CONDITION-OBSERVATION lowest cloud base height dimension
- The height Above Ground Level (AGL) of the base of the lowest cloud.

MIN: 00000
MAX: 21000
UNITS: Meters
SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). 99999 = missing.

FLD LEN: 1 SKY-CONDITION-OBSERVATION lowest cloud base height quality code - The code that denotes a quality status of a lowest cloud base height.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2 SKY-CONDITION-OBSERVATION mid cloud genus code - The code that denotes a type of middle level cloud.

DOM: A specific domain comprised of the characters in the ASCII character set.

00: No middle clouds
01: Altostratus translucidus
02: Altostratus opacus or Nimbostratus
03: Altocumulus translucidus at a single level
04: Patches (often lenticular) of Altocumulus translucidus, continually changing and occurring at one or more levels
05: Altocumulus translucidus in bands, or one or more layers of Altocumulus translucidus or opacus, progressively invading the sky; these Altocumulus clouds generally thicken as a whole
06: Altocumulus cumulogentis (or cumulonimbogentus)
07: Altocumulus translucidus or opacus in two or more layers, or Altocumulus opacus in a single layer, not progressively invading the sky, or Altocumulus with Altostratus or Nimbostratus
08: Altocumulus castellanus or floccus
09: Altocumulus of a chaotic sky; generally at several levels
99: Missing

FLD LEN: 1 SKY-CONDITION-OBSERVATION quality mid cloud genus code - The code that denotes a quality status of a reported mid cloud type.

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DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 2

SKY-CONDITION-OBSERVATION high cloud genus code - The code that denotes a type of high cloud.

DOM: A specific domain comprised of the characters in the ASCII character set.

00: No High Clouds
01: Cirrus fibratus, sometimes uncinus, not progressively invading the sky
02: Cirrus spissatus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus castellanus or floccus
03: Cirrus spissatus cumulonimbogentus
04: Cirrus uncinus or fibratus, or both, progressively invading the sky; they generally thicken as a whole
05: Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole, but the continuous veil does not reach 45 degrees above the horizon
06: Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole; the continuous veil extends more than 45 degrees above the horizon, without the sky being totally covered.
07: Cirrostratus covering the whole sky
08: Cirrostratus not progressively invading the sky and not entirely covering it
09: Cirrocumulus alone, or Cirrocumulus predominant among the High clouds
99: Missing

FLD LEN: 1

SKY-CONDITION-OBSERVATION quality high cloud genus code - The code that denotes a quality status of a reported high cloud type.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3

SKY-COVER-SUMMATION-STATE identifier - The identifier that denotes the availability of a SKY-COVER-SUMMATION-STATE.

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DOM: A specific domain comprised of the ASCII characters

GD1 - GD4 An indicator of up to 4 repeating fields of the following items

SKY-COVER-SUMMATION-STATE coverage code
SKY-COVER-SUMMATION-STATE height dimension
SKY-COVER-SUMMATION-STATE characteristic code

FLD LEN: 1 SKY-COVER-SUMMATION-STATE coverage code - The code that denotes the portion of the total celestial dome covered by all layers of clouds and other obscuring phenomena at or below a given height.

DOM: A specific domain comprised of the ASCII characters

0: Clear - No coverage
1: FEW - 2/8 or less coverage (not including zero)
2: SCATTERED - 3/8-4/8 coverage
3: BROKEN - 5/8-7/8 coverage
4: OVERCAST - 8/8 coverage
5: OBSCURED
6: PARTIALLY OBSCURED
9: MISSING

FLD LEN: 6 SKY-COVER-SUMMATION-STATE height dimension - The height above ground level (AGL) of the base of the cloud layer or obscuring phenomena.

MIN: -00400
MAX: +35000
UNITS: meters

DOM: A general domain comprised of the ASCII characters 0-9, a plus (+) and a minus sign (-). +99999 = missing

FLD LEN: 1 SKY-COVER-SUMMATION-STATE characteristic code - The code that represents a characteristic of a specific cloud or other obscuring phenomena layer.

DOM: A specific domain comprised of the characters in the ASCII character set.

1: Variable height
2: Variable amount
3: Thin clouds
9: Missing

FLD LEN: 3 BELOW-STATION-CLOUD-LAYER identifier - The identifier that represents a BELOW-STATION-CLOUD-LAYER.

DOM: A specific domain comprised of the characters in the ASCII character set.

GG1-GG6 An indicator of up to 6 repeating fields of the following items:

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BELOW-STATION-CLOUD-LAYER coverage code
BELOW-STATION-CLOUD-LAYER top height dimension
BELOW-STATION-CLOUD-LAYER type code
BELOW-STATION-CLOUD-LAYER top code

FLD LEN: 2 BELOW-STATION-CLOUD-LAYER coverage code - The code that denotes the extent of coverage of a BELOW-STATION-CLOUD-LAYER.

DOM: A specific domain comprised of the characters in the ASCII character set.

00: None
01: One oktas - 1/10 or less but not zero
02: Two oktas - 2/10 - 3/10
03: Three oktas - 4/10
04: Four oktas - 5/10
05: Five oktas - 6/10
06: Six oktas - 7/10 - 8/10
07: Seven oktas - 9/10 or more but not 10/10
08: Eight oktas - 10/10
09: Sky obscured, or cloud amount cannot be estimated
10: Partial obscuration
99: Missing

FLD LEN: 5 BELOW-STATION-CLOUD-LAYER top height dimension - The height above mean sea level (MSL) of the top of a BELOW-STATION-CLOUD-LAYER.

MIN: 00000
MAX: 35000
UNITS: Meters
SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). 99999 = missing

FLD LEN: 2 BELOW-STATION-CLOUD-LAYER type code - The code that denotes the classification of the clouds that comprise a BELOW-STATION-CLOUD-LAYER.

DOM: A specific domain comprised of the characters in the ASCII character set.

00: Cirrus (Ci)
01: Cirrocumulus (Cc)
02: Cirrostratus (Cs)
03: Altocumulus (Ac)
04: Altostratus (As)
05: Nimbostratus (Ns)
06: Stratocumulus (Sc)
07: Stratus (St)
08: Cumulus (Cu)
09: Cumulonimbus (Cb)
10: Cloud not visible owing to darkness, fog, dust storm, sandstorm, or other analogous phenomena
99: Missing

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FLD LEN: 2 BELOW-STATION-CLOUD-LAYER top code - The code that denotes the characteristics of the upper surface of a BELOW-STATION-CLOUD-LAYER

DOM: A specific domain comprised of the characters in the ASCII character set.

00: Isolated cloud or fragments of clouds
01: Continuous flat tops
02: Broken cloud - small breaks, flat tops
03: Broken cloud - large breaks, flat tops
04: Continuous cloud, undulation tops
05: Broken cloud - small breaks, undulating tops
06: Broken cloud - large breaks, undulating tops
07: Continuous or almost continuous with towering clouds above the top of the layer
08: Groups of waves with towering clouds above the top of the layer
09: Two or more layers at different levels
99: Missing

FLD LEN: 3 SUNSHINE-OBSERVATION identifier - The identifier that denotes the availability of sunshine information.

DOM: A specific domain comprised of the ASCII characters GJ1

FLD LEN: 4 SUNSHINE-OBSERVATION sunshine duration quantity - The quantity of time sunshine occurred over the reporting period.

MIN: 0000
MAX: 6000
UNITS: minutes

DOM: A general domain comprised of the ASCII characters 0-9.

FLD LEN: 3 GROUND-SURFACE-OBSERVATION identifier - The identifier that denotes the availability of a GROUND-SURFACE-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

IA1: An indicator of the occurrence of the following data item:

GROUND-SURFACE-OBSERVATION code

FLD LEN: 2 GROUND-SURFACE-OBSERVATION code - The code that denotes the physical condition of the ground's surface.

DOM: A specific domain comprised of the characters in the ASCII character set.

NOTE: Code values 10-19 indicate the state of the ground without snow or

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measurable ice cover.

- 00: Surface of ground dry (no appreciable amount of dust or loose sand)
- 01: Surface of ground dry (without cracks and no appreciable amount of dust or loose sand and without snow or measurable ice cover)
- 02: Extremely dry with cracks (without snow or measurable ice cover)
- 03: Loose dry dust or sand not covering ground completely (without snow or measurable ice cover)
- 04: Loose dry dust or sand covering more than one-half of ground (but not completely)
- 05: Loose dry dust or sand covering ground completely
- 06: Thin cover of loose dry dust or sand covering ground completely (without snow or measurable ice cover)
- 07: Moderate or thick cover of loose dry dust or sand covering ground completely (without snow or measurable ice cover)
- 08: Surface of ground moist
- 09: Surface of ground moist (without snow or measurable ice cover)
- 10: Surface of ground wet (standing water in small or large pools on surface)
- 11: Surface of ground wet (standing water in small or large pools on surface without snow or measurable ice cover)
- 12: Flooded (without snow or measurable ice cover)
- 13: Surface of ground frozen
- 14: Surface of ground frozen (without snow or measurable ice cover)
- 15: Glaze or ice on ground, but no snow or melting snow
- 16: Glaze on ground (without snow or measurable ice cover)
- 17: Ground predominantly covered by ice
- 18: Snow or melting snow (with or without ice) covering less than one-half of the ground
- 19: Snow or melting snow (with or without ice) covering more than one-half of the ground but ground not completely covered
- 20: Snow or melting snow (with or without ice) covering ground completely
- 21: Loose dry snow covering less than one-half of the ground
- 22: Loose dry snow covering at least one half of the ground (but not completely)
- 23: Even layer of loose dry snow covering ground completely
- 24: Uneven layer of loose dry snow covering ground completely
- 25: Compact or wet snow (with or without ice) covering less than one-half of the ground
- 26: Compact or wet snow (with or without ice) covering at least one-half of the ground but ground not completely covered
- 27: Even layer of compact or wet snow covering ground completely
- 28: Uneven layer of compact or wet snow covering ground completely
- 29: Snow covering ground completely; deep drifts

FLD LEN: 3 GROUND-SURFACE-OBSERVATION minimum-temperature identifier-
The identifier that denotes the availability of GROUND-SURFACE-OBSERVATION minimum temperature data.

DOM: A specific domain comprised of the characters in the ASCII character set.

IA2: An indicator of the occurrence of the following data item:

GROUND-SURFACE-OBSERVATION minimum-temperature period
quantity
GROUND-SURFACE-OBSERVATION minimum temperature

:
:
:

FLD LEN: 3 GROUND-SURFACE-OBSERVATION minimum-temperature period
quantity - The quantity of time over which the ground
temperature was sampled to determine the minimum
temperature.

MIN: 001
MAX: 480
UNITS: hours
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters
(0-9). 999=Missing

FLD LEN: 5 GROUND-SURFACE-OBSERVATION minimum temperature - The minimum
temperature of the ground's surface recorded during the
observation period.

MIN: -1100
MAX: +1500
UNITS: Degrees Celsius
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric
characters(0-9), a plus sign(+), and a minus sign(-).

FLD LEN: 3 EXTREME-AIR-TEMPERATURE identifier - The identifier that
denotes the start of an EXTREME-AIR-TEMPERATURE data
section.

DOM: A specific domain comprised of the characters in the
ASCII character set.

KA1-KA2 An indicator of up to 2 repeating fields of the
following items:

EXTREME-AIR-TEMPERATURE period quantity
EXTREME-AIR-TEMPERATURE code
EXTREME-AIR-TEMPERATURE air temperature

FLD LEN: 3 EXTREME-AIR-TEMPERATURE period quantity - The quantity of
time over which temperatures were sampled to determine the
EXTREME-AIR-TEMPERATURE.

MIN: 001
MAX: 480
UNITS: Hours:
SCALING FACTOR: 10

DOM: A general domain comprised of the ASCII character set,
999 = missing

FLD LEN: 1 EXTREME-AIR-TEMPERATURE code - The code that denotes an
EXTREME-AIR-TEMPERATURE as a maximum or a minimum.

DOM: A specific domain comprised of the characters in the
ASCII character set.

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N: Minimum temperature
M: Maximum temperature
9: missing

FLD LEN: 5 EXTREME-AIR-TEMPERATURE temperature - The temperature of the high or low air temperature for a given period.

MIN: -1100
MAX: +0630
UNITS: Degrees Celsius
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters(0-9), a plus sign(+), and a minus sign(-).
+9999 = missing

FLD LEN: 3 ATMOSPHERIC-PRESSURE-OBSERVATION identifier -
The identifier that denotes the start of a ATMOSPHERIC-PRESSURE-OBSERVATION data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

MA1 An indicator of the occurrence of the following items:
ATMOSPHERIC-PRESSURE-OBSERVATION altimeter setting rate
ATMOSPHERIC-PRESSURE-OBSERVATION altimeter quality code
ATMOSPHERIC-PRESSURE-OBSERVATION station pressure rate
ATMOSPHERIC-PRESSURE-OBSERVATION station pressure quality code

FLD LEN: 5 ATMOSPHERIC-PRESSURE-OBSERVATION altimeter setting rate -
The pressure value to which an aircraft altimeter is set so that it will indicate the altitude relative to mean sea-level of an aircraft on the ground at the location for which the value was determined.

MIN: 08635
MAX: 10904
UNITS: Hectopascals
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9). Missing = 99999

FLD LEN: 1 ATMOSPHERIC-PRESSURE-OBSERVATION altimeter quality code -
The code that denotes a quality status of an altimeter setting rate.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

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FLD LEN: 5 ATMOSPHERIC-PRESSURE-OBSERVATION station pressure rate - The atmospheric pressure at the observation point.

MIN: 04500
MAX: 10900
UNITS: Hectopascals
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9). 99999 = missing.

FLD LEN: 1 ATMOSPHERIC-PRESSURE-OBSERVATION station pressure quality code - The code that denotes a quality status of the station pressure of an ATMOSPHERIC-PRESSURE-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3 ATMOSPHERIC-PRESSURE-CHANGE identifier - The identifier that denotes the start of a ATMOSPHERIC-PRESSURE-CHANGE data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

Domain Value ID: Domain Value Definition Text

MD1 An indicator of the occurrence of the following items:
ATMOSPHERIC-PRESSURE-CHANGE tendency code
ATMOSPHERIC-PRESSURE-CHANGE quality tendency code
ATMOSPHERIC-PRESSURE-CHANGE three hour quantity
ATMOSPHERIC-PRESSURE-CHANGE quality three hour code
ATMOSPHERIC-PRESSURE-CHANGE twenty four hour quantity
ATMOSPHERIC-PRESSURE-CHANGE quality twenty four hour code

FLD LEN: 1 ATMOSPHERIC-PRESSURE-CHANGE tendency code - The code that denotes the characteristics of a ATMOSPHERIC-PRESSURE-CHANGE that occurs over a period of three hours.

DOM: A specific domain comprised of the characters in the ASCII character set.

Domain Value ID: Domain Value Definition Text

0: Increasing, then decreasing; atmospheric pressure the same or higher than 3 hours ago
1: Increasing then steady; or increasing, then increasing more slowly; atmospheric pressure now higher than 3 hours ago
2: Increasing (steadily or unsteadily); atmospheric pressure now higher than 3 hours ago
3: Decreasing or steady, then increasing; or increasing, then

:
:
:

- increasing more rapidly; atmospheric pressure now higher than 3 hours ago
- 4: Steady; atmospheric pressure the same as 3 hours ago
- 5: Decreasing, then increasing; atmospheric pressure the same or lower than 3 hours ago
- 6: Decreasing, then steady; or decreasing, then decreasing more slowly; atmospheric pressure now lower than 3 hours ago
- 7: Decreasing (steadily or unsteadily); atmospheric pressure now lower than 3 hours ago
- 8: Steady or increasing, then decreasing; or decreasing, then decreasing more rapidly; atmospheric pressure now lower than 3 hours ago
- 9: Missing

FLD LEN: 1 ATMOSPHERIC-PRESSURE-CHANGE quality tendency code - The code that denotes a quality status of the tendency of an ATMOSPHERIC-PRESSURE-CHANGE.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
 1 = Good
 2 = Suspect
 3 = Erroneous
 9 = Missing

FLD LEN: 3 ATMOSPHERIC-PRESSURE-CHANGE three hour quantity - The absolute value of the quantity of change in atmospheric pressure measured at the beginning and end of a three hour period.

MIN: 000
 MAX: 500
 UNITS: Hectopascals
 SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9). Missing = 999

FLD LEN: 1 ATMOSPHERIC-PRESSURE-CHANGE quality three hour code - The code that denotes the quality status of the three hour quantity for an ATMOSPHERIC-PRESSURE-CHANGE.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No check
 1 = Good
 2 = Suspect
 3 = Erroneous
 9 = Missing

FLD LEN: 4 ATMOSPHERIC-PRESSURE-CHANGE twenty four hour quantity - The quantity of change in atmospheric pressure measured at the beginning and end of a twenty four hour period.

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MIN: -800
MAX: +800
UNITS: Hectopascals
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters(0-9), a plus sign(+), and a minus sign(-). +999 = missing

FLD LEN: 1 ATMOSPHERIC-PRESSURE-CHANGE quality twenty four hour code -
The code that denotes a quality status of a reported twenty
four hour ATMOSPHERIC-PRESSURE-CHANGE.

DOM: A specific domain comprised of the characters in the
ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3 GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL identifier - The i
identifier that denotes the availability of GEOPOTENTIAL-
HEIGHT-ISOBARIC-LEVEL data.

DOM: A specific domain comprised of the characters in the
ASCII character set.

ME1: An indicator of the occurrence of the following data
items:
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL code
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension

FLD LEN: 1 GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL code - The code that
denotes the isobaric surface used to represent geopotential
height.

DOM: A specific domain comprised of the characters in the
ASCII character set.

Domain Value ID: Domain Value Definition Text
1: 1000 hectopascals
2: 925 hectopascals
3: 850 hectopascals
4: 700 hectopascals
5: 500 hectopascals
9: Missing

FLD LEN: 4 GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension - The
height of a GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL

MIN: 0000
MAX: 9998
UNITS: Geopotential Meters
SCALING FACTOR: 1

:
:
:

DOM: A general domain comprised of the numeric characters (0-9). 9999 = missing

FLD LEN: 3 SUPPLEMENTARY-WIND-OBSERVATION identifier - The identifier that denotes the start of a SUPPLEMENTARY-WIND-OBSERVATION data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

OA1 - OA3 An indicator of up to 3 occurrences of the following item:
 SUPPLEMENTARY-WIND-OBSERVATION type code
 SUPPLEMENTARY-WIND-OBSERVATION period quantity
 SUPPLEMENTARY-WIND-OBSERVATION speed rate

FLD LEN: 1 SUPPLEMENTARY-WIND-OBSERVATION type code - The code that denotes a type of SUPPLEMENTARY-WIND-OBSERVATION.

DOM: A specific domain comprised of the ASCII characters.
 1 = Average speed of prevailing wind
 2 = Mean wind speed
 3 = Maximum instantaneous wind speed
 4 = Maximum gust speed
 5 = Maximum mean wind speed
 6 = Maximum 1-minute mean wind speed
 9 = missing

FLD LEN: 2 SUPPLEMENTARY-WIND-OBSERVATION period quantity - The quantity of time over which a SUPPLEMENTARY-WIND-OBSERVATION occurred.

MIN: 01
 MAX: 48
 UNITS: Hours

DOM: A general domain comprised of the ASCII characters.
 99 = missing

FLD LEN: 4 SUPPLEMENTARY-WIND-OBSERVATION speed rate - The rate of horizontal speed of air reported in the SUPPLEMENTARY-WIND-OBSERVATION.

MIN: 0000
 MAX: 2000
 UNITS: Meters per Second
 SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9). 9999 = missing

FLD LEN: 3 WIND-GUST-OBSERVATION identifier - The identifier that denotes the start of a WIND-GUST-OBSERVATION data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

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OC1 An indicator of the occurrence of the following item:
WIND-GUST-OBSERVATION speed rate
WIND-GUST-OBSERVATION quality code

FLD LEN: 4 WIND-GUST-OBSERVATION speed rate - The rate of speed of a
wind gust.

MIN: 0050
MAX: 1100
UNITS: Meters per second
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters
(0-9) .

FLD LEN: 1 WIND-GUST-OBSERVATION quality code - The code that denotes a
quality status of a reported WIND-GUST-OBSERVATION speed
rate.

DOM: A specific domain comprised of the characters in the
ASCII character set.

0 = No check
1 = Good
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3 SEA-SURFACE-TEMPERATURE-OBSERVATION identifier - The
identifier that denotes the start of a SEA-SURFACE-
TEMPERATURE-OBSERVATION temperature data section.

DOM: A specific domain comprised of the characters in the
ASCII character.

SA1 An indicator of the occurrence of the following item:
SEA-SURFACE-TEMPERATURE-OBSERVATION temperature

FLD LEN: 4 SEA-SURFACE-TEMPERATURE-OBSERVATION temperature - The
temperature of the water at the surface.

MIN: -050
MAX: +450
UNITS: Degrees Celsius
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric
characters(0-9), a plus sign(+), and a minus sign(-) .

FLD LEN: 3 WAVE-MEASUREMENT identifier - The identifier that represents
the availability of a WAVE-MEASUREMENT.

DOM: A specific domain comprised of the characters in the
ASCII character set.

UA1: An indicator of the occurrence of the following data

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items:
 WAVE-MEASUREMENT method code
 WAVE-MEASUREMENT wave period quantity
 WAVE-MEASUREMENT wave height dimension
 WAVE-MEASUREMENT sea state code

FLD LEN: 1 WAVE-MEASUREMENT method code - A code that represents the method used to obtain a WAVE-MEASUREMENT.

DOM: A specific domain comprised of the ASCII characters

M: Manual
 I: Instrumental
 9: Missing

FLD LEN: 2 WAVE-MEASUREMENT wave period quantity - The quantity of time required for two successive wave crests to pass a fixed point.

MIN: 00
 MAX: 14
 UNITS: Seconds
 SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). Missing = 99.

FLD LEN: 3 WAVE-MEASUREMENT wave height dimension - The height of a wave measured from trough to crest.

MIN: 000
 MAX: 500
 UNITS: Meters
 SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9). Missing = 999.

FLD LEN: 2 WAVE-MEASUREMENT sea state code - The code that denotes the roughness of the surface of the sea in terms of average wave height.

DOM: A specific domain comprised of the ASCII characters
 00: Calm, glassy - wave height = 0 meters
 01: Calm, rippled - wave height = 0 - 0.1 meters
 02: Smooth, wavelets - wave height = 0.1 - 0.5 meters
 03: Slight, - wave height = 0.5 - 1.25 meters
 04: Moderate - wave height = 1.25 - 2.5 meters
 05: Rough - wave height = 2.5 - 4.0 meters
 06: Very rough - wave height = 4.0 - 6.0 meters
 07: High - wave height = 6.0 - 9.0 meters
 08: Very high - wave height = 9.0 - 14.0 meters
 09: Phenomenal - wave height = over 14.0 meters
 99: missing

FLD LEN: 3 WAVE-MEASUREMENT primary swell identifier - The identifier that denotes the availability of primary swell data.

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DOM: A specific domain comprised of the characters in the ASCII character set.

UG1: An indicator of the occurrence of the following data items:

WAVE-MEASUREMENT primary swell period quantity
WAVE-MEASUREMENT primary swell height dimension
WAVE-MEASUREMENT primary swell direction angle

FLD LEN: 2 WAVE-MEASUREMENT primary swell period quantity - The quantity of time required for two successive primary swell wave crests to pass a fixed point.

MIN: 00
MAX: 14
UNITS: Seconds
SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). Missing = 99.

FLD LEN: 3 WAVE-MEASUREMENT primary swell height dimension - The height of a primary swell wave measured from the trough to the crest.

MIN: 000
MAX: 500
UNITS: Meters
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9). Missing = 999.

FLD LEN: 3 WAVE-MEASUREMENT primary swell direction angle - The angle measured clockwise from true north to the direction from which primary swell waves are coming.

MIN: 001
MAX: 360
UNITS: Angular Degrees
SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). Missing = 999.

FLD LEN: 3 WAVE-MEASUREMENT secondary swell identifier - An indicator that denotes the start of a WAVE-MEASUREMENT secondary swell group.

DOM: A specific domain comprised of the characters in the ASCII character set.

Domain Value ID: Domain Value Definition Text

UG2: An indicator of the occurrence of the following data items:

:
:
:

WAVE-MEASUREMENT secondary swell period quantity
WAVE-MEASUREMENT secondary swell height dimension
WAVE-MEASUREMENT secondary swell direction angle

FLD LEN: 2 WAVE-MEASUREMENT secondary swell period quantity - The quantity of time required for two successive secondary swell wave crests to pass a fixed point.

MIN: 00
MAX: 14
UNITS: Seconds
SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). Missing = 99.

FLD LEN: 3 WAVE-MEASUREMENT secondary swell height dimension - The height of a secondary swell wave measured from the trough to the crest.

MIN: 000
MAX: 500
UNITS: Meters
SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9). Missing = 999.

FLD LEN: 3 WAVE-MEASUREMENT secondary swell direction angle - The angle measured clockwise from true north to the direction from which secondary swell waves are coming.

MIN: 001
MAX: 360
UNITS: Angular Degrees
SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9). Missing = 999.

FLD LEN: 3 PLATFORM-ICE-ACCRETION identifier - The identifier that denotes the availability of PLATFORM-ICE-ACCRETION data.

DOM: A specific domain comprised of the characters in the ASCII character set.

WA1: An indicator of the occurrence of the following data items:
PLATFORM-ICE-ACCRETION source code
PLATFORM-ICE-ACCRETION thickness dimension
PLATFORM-ICE-ACCRETION tendency code

FLD LEN: 1 PLATFORM-ICE-ACCRETION source code - The code that denotes the source of the ice that builds up on a marine platform's structure.

DOM: A specific domain composed of the following qualitative

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:
:

data values:

Domain Value ID: Domain Value Definition Text

1: Icing from ocean spray
2: Icing from fog
3: Icing from spray and fog
4: Icing from rain
5: Icing from spray and rain
9: Missing

FLD LEN: 3 PLATFORM-ICE-ACCRETION thickness dimension - The thickness of the ice that has accumulated on a marine platform.

MIN: 000
MAX: 998
UNITS: centimeters
SCALING FACTOR: 10

DOM: A specific domain composed of the integer values (0 - 9). 999 = missing

FLD LEN: 1 PLATFORM-ICE-ACCRETION tendency code - The code that denotes the rate of change of ice thickness on a marine platform.

DOM: A specific domain composed of the following qualitative data values:

Domain Value ID: Domain Value Definition Text

0: Ice not building up
1: Ice building up slowly
2: Ice building up rapidly
3: Ice melting or breaking up slowly
4: Ice melting or breaking up rapidly
9: Missing

FLD LEN: 3 WATER-SURFACE-ICE-HISTORICAL-OBSERVATION identifier - The identifier that denotes the availability of a WATER-SURFACE-ICE-HISTORICAL-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

WG1: An indicator of the occurrence of the following data item:

OCEAN-ICE-OBSERVATION edge bearing code
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge distance dimension
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge orientation code
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION formation type code
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION navigation effect code

FLD LEN: 2 OCEAN-ICE-OBSERVATION edge bearing code - The code that denotes the true bearing, measured from the reporting platform to the closest point of the principle ice edge.

:
:
:

DOM: A specific domain composed of the following qualitative data values:

00: Ship in shore or flaw lead
01: Principal ice edge towards NE
02: Principal ice edge towards E
03: Principal ice edge towards SE
04: Principal ice edge towards S
05: Principal ice edge towards SW
06: Principal ice edge towards W
07: Principal ice edge towards NW
08: Principal ice edge towards N
09: Not determined (ship in ice)
10: Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible
99: missing

COMMENT: 1. If more than one ice edge can be stated, the nearest or most important shall be reported
2. The bearing shall refer to the true and not to the magnetic north

FLD LEN: 2 WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge distance dimension - The distance from the reporting ship's location to the nearest point on the ice edge.

MIN: 00
MAX: 98
UNITS: Kilometers

DOM: A general domain comprised of the ASCII characters 0-9
99 = missing

FLD LEN: 2 WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge orientation code - The code that denotes the orientation of the principle ice edge and the direction relative to which the ice lies.

DOM: A specific domain comprised of the ASCII characters
00: ORIENTATION OF ICE EDGE IMPOSSIBLE TO ESTIMATE--SHIP OUTSIDE THE ICE
01: ICE EDGE LYING IN A DIRECTION NE TO SW WITH ICE SITUATED TO THE NW
02: ICE EDGE LYING IN A DIRECTION E TO W WITH ICE SITUATED TO THE N
03: ICE EDGE LYING IN A DIRECTION SE TO NW WITH ICE SITUATED TO THE NE
04: ICE EDGE LYING IN A DIRECTION S TO N WITH ICE SITUATED TO THE E
05: ICE EDGE LYING IN A DIRECTION SW TO NE WITH ICE SITUATED TO THE SE
06: ICE EDGE LYING IN A DIRECTION W TO E WITH ICE SITUATED TO THE S
07: ICE EDGE LYING IN A DIRECTION NW TO SE WITH ICE SITUATED TO THE SW
08: ICE EDGE LYING IN A DIRECTION N TO S WITH ICE SITUATED TO THE W
09: ORIENTATION OF ICE EDGE IMPOSSIBLE TO ESTIMATE--SHIP INSIDE THE ICE
99: Missing

FLD LEN: 2 WATER-SURFACE-ICE-HISTORICAL-OBSERVATION formation type code - The code that denotes the type of ice formation reported in the WATER-SURFACE-ICE-HISTORICAL-OBSERVATION.

DOM: A specific domain comprised of the ASCII characters
00: NO ICE (0 MAY BE USED TO REPORT ICE BLINK AND THEN A

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:
:

DIRECTION MUST BE REPORTED)

- 01: NEW ICE
- 02: FAST ICE
- 03: PACK-ICE/DRIFT-ICE
- 04: PACKED (COMPACT) SLUSH OR SLUDGE
- 05: SHORE LEAD
- 06: HEAVY FAST ICE
- 07: HEAVY PACK-ICE/DRIFT-ICE
- 08: HUMMOCKED ICE
- 09: ICEBERGS-ICEBERGS CAN BE REPORTED IN PLAIN LANGUAGE
- 99: Missing

FLD LEN: 2 WATER-SURFACE-ICE-HISTORICAL-OBSERVATION navigation effect code - The code that denotes the effect of ice on navigation.

DOM: A specific domain comprised of the ASCII characters

- 00: NAVIGATION UNOBSTRUCTED
- 01: NAVIGATION UNOBSTRUCTED FOR STEAMERS, DIFFICULT FOR SAILING SHIPS
- 02: NAVIGATION DIFFICULT FOR LOW-POWERED STEAMERS, CLOSED TO SAILING SHIPS
- 03: NAVIGATION POSSIBLE ONLY FOR POWERFUL STEAMERS
- 04: NAVIGATION POSSIBLE ONLY FOR STEAMERS CONSTRUCTED TO WITHSTAND

ICE PRESSURE

- 05: NAVIGATION POSSIBLE WITH THE ASSISTANCE OF ICE-BREAKERS
- 06: CHANNEL OPEN IN THE SOLID ICE
- 07: NAVIGATION TEMPORARILY CLOSED
- 08: NAVIGATION CLOSED
- 09: NAVIGATION CONDITIONS UNKNOWN, E.G. OWING TO BAD WEATHER
- 99: Missing

FLD LEN: 3 WATER-SURFACE-ICE-OBSERVATION identifier - The identifier that denotes the availability of a WATER-SURFACE-ICE-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

WD1: An indicator of the occurrence of the following data item:

- OCEAN-ICE-OBSERVATION edge bearing code
- WATER-SURFACE-ICE-OBSERVATION uniform concentration rate
- WATER-SURFACE-ICE-OBSERVATION non-uniform concentration code
- WATER-SURFACE-ICE-OBSERVATION ship relative position code
- WATER-SURFACE-ICE-OBSERVATION ship penetrability code
- WATER-SURFACE-ICE-OBSERVATION ice trend code
- WATER-SURFACE-ICE-OBSERVATION development code
- WATER-SURFACE-ICE-OBSERVATION growler-berg-y-bit presence code
- WATER-SURFACE-ICE-OBSERVATION growler-berg-y-bit quantity
- WATER-SURFACE-ICE-OBSERVATION iceberg quantity

FLD LEN: 2 OCEAN-ICE-OBSERVATION edge bearing code - The code that denotes the true bearing, measured from the reporting platform to the closest point of the principle ice edge.

:
:

DOM: A specific domain composed of the following qualitative data values:

00: Ship in shore or flaw lead
01: Principal ice edge towards NE
02: Principal ice edge towards E
03: Principal ice edge towards SE
04: Principal ice edge towards S
05: Principal ice edge towards SW
06: Principal ice edge towards W
07: Principal ice edge towards NW
08: Principal ice edge towards N
09: Not determined (ship in ice)
10: Unable to report, because of darkness, lack of
visibility or because only ice of land origin is visible
99: Missing

COMMENT: 1. If more than one ice edge can be stated, the nearest or most important shall be reported
2. The bearing shall refer to the true and not to the magnetic north

FLD LEN: 3 WATER-SURFACE-ICE-OBSERVATION uniform concentration rate -
The percent concentration (surface coverage) of ice on the water surface.

MIN: 000
MAX: 100
UNITS: percent

DOM: A general domain comprised of the ASCII characters 0-9. 999= Missing

FLD LEN: 2 WATER-SURFACE-ICE-OBSERVATION non-uniform concentration code
The code that denotes the coverage arrangement of non-uniformly distributed ice.

DOM: A specific domain comprised of the characters in the ASCII character set.

06: Strips and patches of pack ice with open water between
07: Strips and patches of close or very close pack ice with areas of lesser concentration between.
08: Fast ice with open water, very open or open pack ice to seaward of the ice boundary.
09: Fast ice with close or very close pack ice to seaward of the ice boundary.
99: Unable to report, because of darkness, lack of visibility, or because ship is more than 0.5 nautical mile away from ice edge.

FLD LEN: 1 WATER-SURFACE-ICE-OBSERVATION ship relative position code -
The code that denotes the relative position of the reporting ship to the ice formation.

DOM: A specific domain comprised of the ASCII characters

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0: SHIP IN OPEN WATER WITH FLOATING ICE IN SIGHT
1: IN OPEN LEAD OR FAST ICE
2: IN ICE OR WITHIN 0.5 NAUTICAL MILES OF ICE EDGE
9: Missing

FLD LEN: 1 WATER-SURFACE-ICE-OBSERVATION ship penetrability code - The code that denotes the degree of ease with which the reporting ship can proceed through the ice..

DOM: A specific domain comprised of the ASCII characters.

1: EASY
2: DIFFICULT
3: BESET (SURROUNDED SO CLOSELY BY SEA ICE THAT STEERING CONTROL IS LOST.)
9: Missing

FLD LEN: 1 WATER-SURFACE-ICE-OBSERVATION ice trend code - The code that denotes the trend of ice conditions.

DOM: A specific domain comprised of the ASCII characters.

1: CONDITIONS IMPROVING
2: CONDITIONS STATIC
3: CONDITIONS WORSENING
4: CONDITIONS WORSENING; ICE FORMING AND FLOES FREEZING TOGETHER
5: CONDITIONS WORSENING; ICE UNDER SLIGHT PRESSURE
6: CONDITIONS WORSENING; ICE UNDER MODERATE OR SEVERE PRESSURE
9: Missing

FLD LEN: 2 WATER-SURFACE-ICE-OBSERVATION development code - The code that denotes the development stage of the ice.

DOM: A specific domain comprised of the ASCII characters

00: NEW ICE ONLY (FRAZIL ICE, GREASE ICE, SLUSH, SLUGS)
01: NILAS OR ICE RIND, LESS THAN 10 CM THICK
02: YOUNG ICE (GREY ICE, GREY-WHITE ICE), 10 - 30 CM THICK
03: PREDOMINANTLY NEW AND/OR YOUNG ICE WITH SOME FIRST YEAR ICE
04: PREDOMINANTLY THIN FIRST YEAR ICE WITH SOME NEW AND/OR YOUNG ICE
05: ALL THIN FIRST YEAR ICE (30 - 70 CM THICK)
06: PREDOMINANTLY MEDIUM FIRST YEAR ICE (70 - 120 CM THICK) AND THICK FIRST YEAR ICE (> 120 CM THICK) WITH SOME THINNER (YOUNGER) FIRST YEAR ICE
07: ALL MEDIUM AND THICK FIRST YEAR ICE
08: PREDOMINANTLY MEDIUM AND THICK FIRST YEAR ICE WITH SOME OLD ICE (USUALLY MORE THAN 2 M THICK)
09: PREDOMINANTLY OLD ICE
99: UNABLE TO REPORT, BECAUSE OF DARKNESS, LACK OF VISIBILITY OR BECAUSE ONLY ICE OF LAND ORIGIN IS VISIBLE OR BECAUSE SHIP IS MORE THAN .5 NM AWAY FROM ICE

FLD LEN: 1 WATER-SURFACE-ICE-OBSERVATION growler-bergy-bit presence code - The code that denotes the existence of growlers

:
:
:

and/or bergy bits.

DOM: A specific domain comprised of the ASCII characters
0: NOT PRESENT
1: PRESENT
2: UNKNOWN

FLD LEN: 3 WATER-SURFACE-ICE-OBSERVATION growler-berg-y-bit quantity -
The quantity of growlers and berg-y bits observed in the
area.

MIN: 000
MAX: 998

DOM: A general domain comprised of the ASCII characters 0-
9. 999 = Missing

FLD LEN: 3 WATER-SURFACE-ICE-OBSERVATION iceberg quantity - The
quantity of icebergs observed in the area.

MIN: 000
MAX: 998

DOM: A general domain comprised of the ASCII characters 0-
9. 999 = Missing

Remarks Data Section

FLD LEN 3 GEOPHYSICAL-POINT-OBSERVATION remarks identifier - The
identifier that denotes the beginning of the remarks data
section.

DOM: A specific domain comprised of the ASCII character set.
REM = Remarks Data Section

FLD LEN: 3 GEOPHYSICAL-POINT-OBSERVATION remark identifier - An
indicator of the type of surface remarks data contained in
the GEOPHYSICAL-POINT-OBSERVATION-REMARK text.

DOM: A specific domain composed of the following qualitative
data values.

Domain Value ID: Domain Value Definition Text
SYN : Synoptic Remarks
AWY : Airways Remarks
MET : Metar Remarks

Indicate the occurrence of the following data items:
GEOPHYSICAL-POINT-OBSERVATION remark length quantity
GEOPHYSICAL-POINT-OBSERVATION remark text

FLD LEN: 3 GEOPHYSICAL-POINT-OBSERVATION remark length quantity - A
quantity that indicates the length of a individual
GEOPHYSICAL-POINT-OBSERVATION-REMARK text.

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:

MIN: 001
MAX: 250

DOM: A general domain composed of the ASCII characters (0-9).

FLD LEN: 250 GEOPHYSICAL-POINT-OBSERVATION remark text - The text of a
GEOPHYSICAL-POINT-OBSERVATION-REMARK.

DOM: A general domain comprised of the characters in the
ASCII character set.

Element Quality Data Section

FLD LEN 3 GEOPHYSICAL-POINT-OBSERVATION quality data identifier - The
identifier that denotes the beginning of the element quality
data section.

DOM: A specific domain comprised of the ASCII character set.
EQD = Element Quality Data

FLD LEN 3 ORIGINAL-OBSERVATION-ELEMENT-QUALITY identifier - The
identifier that denotes the existence of ORIGINAL-
OBSERVATION-ELEMENT-QUALITY data.

DOM: A specific domain comprised of the ASCII character set.

Q01 - Q99: The following may be occur from 0 to 99 times.
ORIGINAL-OBSERVATION-ELEMENT-QUALITY original value text
ORIGINAL-OBSERVATION-ELEMENT-QUALITY reason code
ORIGINAL-OBSERVATION-ELEMENT-QUALITY parameter code

FLD LEN 6 ORIGINAL-OBSERVATION-ELEMENT-QUALITY original value text -
The original value text for elements which were rejected or
recomputed during validation.

DOM: A general domain comprised of the characters in the
ASCII character set.

FLD LEN 1 ORIGINAL-OBSERVATION-ELEMENT-QUALITY reason code - The code
that denotes the reason an element was identified as
suspect, erroneous or recomputed.

DOM: A specific domain comprised of the characters in the
ASCII character set.

0 = ORIGINAL VALUE MISSING OR CORRUPTED
1 = GROSS ERROR CHECKS (RANGE AND/OR DOMAIN CHECK)
2 = GEOPHYSICAL CHECKS (CHECKING THE VALIDITY AGAINST OTHER
PARAMETERS)
3 = CONSISTENCY CHECKS (CHECKING THE VALIDITY AGAINST THE
SAME TYPE OF PARAMETER)
4 = GROSS ERROR CHECKS AND GEOPHYSICAL CHECKS
5 = GROSS ERROR CHECKS AND CONSISTENCY CHECKS
6 = GEOPHYSICAL CHECKS AND CONSISTENCY CHECKS
7 = GROSS ERROR CHECKS AND GEOPHYSICAL CHECKS AND

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CONSISTENCY CHECKS

FLD LEN 6 ORIGINAL-OBSERVATION-ELEMENT-QUALITY parameter code - The code that denotes the type of parameter that the supplemental-level-element-quality applies to.

DOM: a specific domain comprised of the characters in the ASCII character set.

Comment Text:

APC3 : ATMOSPHERIC-PRESSURE-CHANGE THREE HOUR CHANGE QUANTITY
 ATOLD : AIR-TEMPERATURE-OBSERVATION-LEVEL DEWPOINT TEMPERATURE
 WOSPD : WIND-OBSERVATION SPEED RATE
 WOLSPD : WIND-OBSERVATION-LEVEL SPEED RATE
 WOLDIR : WIND-OBSERVATION-LEVEL DIRECTION ANGLE
 WODIR : WIND-OBSERVATION DIRECTION ANGLE
 ATOLDS : AIR-TEMPERATURE-OBSERVATION-LEVEL DENSITY RATE
 ATOLT : AIR-TEMPERATURE-OBSERVATION-LEVEL AIR TEMPERATURE
 ATOD : AIR-TEMPERATURE-OBSERVATION DEW POINT TEMPERATURE
 ATOT : AIR-TEMPERATURE-OBSERVATION AIR TEMPERATURE
 APOSP : ATMOSPHERIC-PRESSURE-OBSERVATION STATION PRESSURE RATE
 APOSLP : ATMOSPHERIC-PRESSURE-OBSERVATION SEA LEVEL PRESSURE
 APOLP : ATMOSPHERIC-PRESSURE-OBSERVATION-LEVEL PRESSURE RATE
 APOLH : ATMOSPHERIC-PRESSURE-OBSERVATION-LEVEL HEIGHT DIMENSION
 APOA : ATMOSPHERIC-PRESSURE-OBSERVATION ALTIMETER RATE
 WGOSPD : WIND GUST-OBSERVATION SPEED RATE
 APCQ24 : ATMOSPHERIC-PRESSURE-CHANGE TWENTY FOUR HOUR QUANTITY
 APCTEN : ATMOSPHERIC-PRESSURE-CHANGE TENDENCY CODE
 PRSWOA : PRESENT-WEATHER-OBSERVATION AUTOMATED ATMOSPHERIC CONDITION CODE
 PRSWM1 : PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
 PRSWM2 : PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
 PRSWM3 : PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
 PRSWM4 : PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
 PRSWM5 : PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
 PRSWM6 : PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
 PRSWM7 : PRESENT-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
 PSTWA1 : PAST-WEATHER-OBSERVATION AUTOMATED ATMOSPHERIC CONDITION CODE
 PSTWA2 : PAST-WEATHER-OBSERVATION AUTOMATED ATMOSPHERIC CONDITION CODE
 PSTWM1 : PAST-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
 PSTWM2 : PAST-WEATHER-OBSERVATION MANUAL ATMOSPHERIC CONDITION CODE
 PSTWOP : PAST-WEATHER-OBSERVATION PERIOD QUANTITY
 SCOCIG : SKY-CONDITION-OBSERVATION CEILING HEIGHT DIMENSION
 SCOHCG : SKY-CONDITION-OBSERVATION HIGH CLOUD GENUS CODE
 SCOLCB : SKY-CONDITION-OBSERVATION LOWEST CLOUD BASE HEIGHT DIMENSION
 SCOLCG : SKY-CONDITION-OBSERVATION LOW CLOUD GENUS CODE
 SCOMCG : SKY-CONDITION-OBSERVATION MID CLOUD GENUS CODE
 SCOTCV : SKY-CONDITION-OBSERVATION TOTAL COVERAGE CODE
 SCOTLC : SKY-CONDITION-OBSERVATION TOTAL LOWEST CLOUD COVER CODE
 VODIS : VISIBILITY-OBSERVATION DISTANCE DIMENSION
 VOVAR : VISIBILITY-OBSRVATION VARIABILITY CODE

3. **Start Date**: the 1920's but the date will vary by station.

4. **Stop Date**: Ongoing.

5. **Coverage**: Global Coverage

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- a. Southernmost Latitude: 90S
- b. Northernmost Latitude: 90N
- c. Westernmost Longitude: 180W
- d. Easternmost Longitude: 180E

6. How to Order Data:

Ask NCDC's Climate Services about the cost of obtaining this data set.
Phone: 828-271-4800
FAX: 828-271-4876
E-mail: NCDC.Orders@noaa.gov

7. Archiving Data Center:

Air Force Combat Climatology Center (AFCCC)
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001
Phone: (828) 271-4800.

8. Technical Contact:

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001
Phone: (828) 271-4800.

9. Known Uncorrected Problems: Minimal number of random errors, decode errors, and reporting errors (by station)--less than .1% of observations affected overall. Most errors are corrected or eliminated by quality control software.

10. Quality Statement: Data have undergone extensive automated quality control, and additional manual quality control for US Air Force stations.

11. Essential Companion Datasets: DATSAV2 - DSI-9950.

12. References: No information provided with original documentation. Mr. T. Jonathan Whiteside from AFCCC designed the data set for AFCCC use. The data set was designed to meet Joint METOC Configuration Data Model (JMDSM) standards.

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